

**INSTALLATION, OPERATING AND SERVICE MANUAL  
FOR EASY RADIANT WORKS "HEATWAVE" MODEL GH-25-40  
GAS FIRED, VENTED INFRARED TUBE HEATER FOR RESIDENTIAL &  
COMMERCIAL / INDUSTRIAL APPLICATIONS.**

**For Your Safety...IF YOU SMELL GAS**

1. Open all windows
2. Do not try to light any appliance.
3. Do not use any electrical switches
4. Do not use any telephone in your house. Immediately call your local gas supplier from a neighbour's home and follow the gas suppliers' instructions. If you are unable to reach the gas supplier, CALL THE FIRE DEPARTMENT!

**Installer**

Please take time to read this manual completely to fully understand the instructions prior to the installation. This manual must be left with the owner for future reference.

**Owner**

Retain this manual in a safe place to provide your serviceman information if it becomes necessary.

**WARNING**

Improper installation, adjustment, alteration, service or maintenance of this appliance will result in property damage, serious personal injury or death. This appliance must only be installed by a qualified, licensed and experienced gas fitter, familiar with the installation of this type of appliance.

For your safety, do not use or store gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.

The installation of this appliance must in all cases conform with local and national building codes or in the absence of local codes with the current CAN/CGA B149.1&2 in Canada or ANSI Z233.1 latest revision in the United States. This appliance has been tested and certified for use in Canada and the United States.

Warnock Hersey



LISTED GAS FIRED APPLIANCE

Certified for **CANADA**  
Certifiée pour **AND USA**

Certified / Certifiée: CAN/CGA 2.5M 86, CAN 2.16 M81,  
CAN 20 M85, CAN/CGA 2.17M91  
Conforms to / Conforme: ANSI STD Z83.6B-1993

# Read This Manual

Read this manual carefully before installing or servicing this equipment. Improper installation, servicing or maintenance will cause death, injury or property damage. Check the minimum distance to combustibles, as noted on the rating plate on the burner and on the following pages of this manual to ensure that the product is suitable for the application.

## Installer

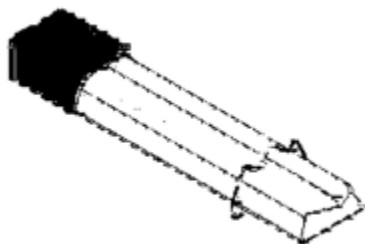
After the installation is complete, check product operation as provided in these instructions, and ensure that a proper installation inspection, as is required in your area, is completed.

This appliance is manufactured by:

Easy Radiant Works  
12288 Side Road 22  
Wainfleet,  
Ontario,  
Canada  
LOS 1V0  
Phone 905 899 3473  
Fax 905 899 2262  
[www.easyradiantworks.com](http://www.easyradiantworks.com)  
[erw@vaxxine.com](mailto:erw@vaxxine.com)

# Contents of the shipping box

Please check the carton and locate the items shown on this page.



Heater Assembly



Vent termination

5" Balanced flue consisting  
of 1 - 5" vent pipe - 60 inches  
long and 1- 3" flue pipe  
66 inches long.



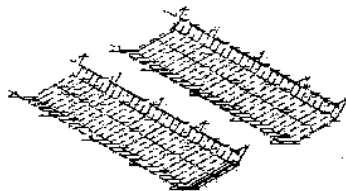
Bird Screen



Thermostat



Protective grill kits  
(Optional)



ALSO INCLUDED . . . NOT SHOWN: ½" flexible gas connector, 5 ft. #10 Jack chain for hanging the heater, 2 vent centre guides.

OPTIONAL ACCESSORIES: 5 ft. vent extension kit, and 90-degree elbow kit.

# Introduction

## Heater specifications “HeatWave” Model GH-25-40

### Electrical

Rating: 120 VAC, 60 hz. single phase  
1 amp  
Connection: 3 pin grounded plug

### Manifold Pressure

Natural Gas: 3.5" w.c.  
L.P. (Propane) 10.5" w.c.

### Gas Inlet Connections:

Connection: ½" Male NPT

### Venting Specifications:

Maximum length: 12 ft.  
Minimum length: 2 ft. 6"  
Maximum 1 - 90 degree elbow

### BTU/hr.

Natural gas & L.P. (Propane)  
Minimum 25,000 BTU  
Maximum 40,000 BTU

Flue pipe - 3.0" diameter  
Vent pipe - 5.0" diameter

### Gas Inlet Pressure

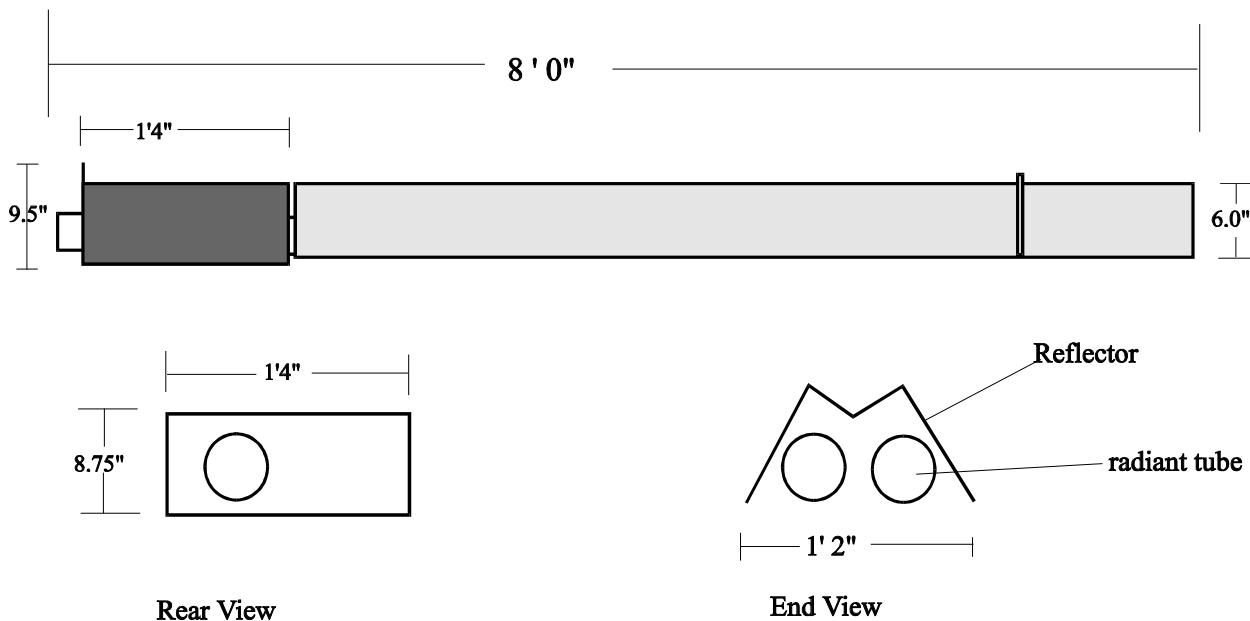
#### Natural Gas:

Minimum inlet 4.0" w.c.  
Maximum inlet 14.0 " w.c.

#### L.P. (Propane)

Minimum inlet 11.0" w.c.  
Maximum inlet 14.0" w.c.

N.B. only flue pipe and vent pipe supplied by the manufacturer may be used.



## Where can the heater be installed?

The HeatWave GH-25-40 garage heater is intended for use in the following areas:

- residential garages
- workshops

Light commercial / industrial applications such as:

- entranceways
- storage rooms
- lobby areas
- manufacturing areas
- lunch rooms
- agricultural buildings

## Where can't the heater be installed?

The HeatWave GH-25-40 garage heater is not intended for use in residential living spaces or basements.

## Installers responsibility

The HeatWave heater, as well as the gas and electrical supply, and the venting of the heater must be installed in accordance with applicable specifications and codes. Only firms (or individuals) well qualified in this type of work should install the system. Consult local Building Inspectors or Fire Marshalls for guidance. Use the information given in this manual together with the cited codes and regulations to perform the installation. If any aspects of this installation process are unclear, consult Easy Radiant Works before proceeding.

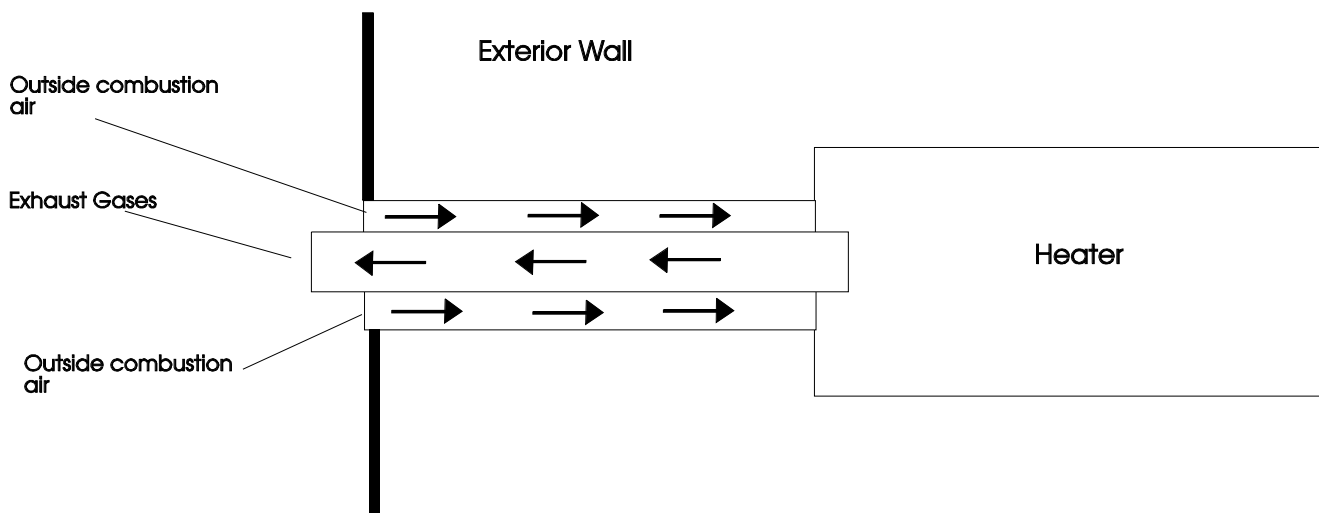
The installer must furnish all materials required that are not furnished with the heater. It is also the installer's responsibility to see that the materials and installation methods used, result in a job that is workmanlike in appearance and is in compliance with all applicable codes and requirements of this manual.

The type of gas appearing on the nameplate must be the type of gas used. Installation must comply with local codes and recommendations of the local gas supplier. If fuel used, does not match the fuel listed on the nameplate, discontinue use immediately and contact Easy Radiant Works for information on converting the appliance to the appropriate fuel.

## Venting Requirements

The HeatWave heater MUST be installed with the venting system supplied with the heater, or one of the optional venting kits available from Easy Radiant Works. DO NOT connect the heater to a separate chimney and DO NOT common vent with any other fuel-burning appliance. The HeatWave heater employs a balanced flue/air venting duct system and must conform to the following minimum and maximum vent requirements. The location, size, installation and termination of vents, as well as the minimum safe distances when penetrating combustible walls, must comply with local codes, national codes and the recommendations of the local gas company.

Maximum vent length: 12 feet plus 1 elbow (elbow available from manufacturer).  
Minimum vent length: 2 ft. 6 inches



The balanced flue consists of a 3" diameter flue that is concentrically positioned inside a 5 " diameter pipe (see above). The 5" diameter pipe supplies outside air that is necessary for combustion, while the 3" diameter flue carries the products of combustion from the heater. The 3" and 5" pipes are separated by the centering guides supplied with the heater. The balanced flue is applicable for horizontal venting arrangements only.

## Commercial / Industrial Applications

<b>Aircraft Hangers</b>	<p>The HeatWave heater may be used in certain areas of aircraft hangers. The installation must be in accordance with local and national codes.</p> <ul style="list-style-type: none"><li>▪ Heaters in aircraft, storage or service areas must be installed a minimum of 10 ft. above the upper surface of wings or engine enclosures of the highest aircraft that may be housed in the hanger. (This should be measured from the bottom of the heater to the top of the wing, or engine enclosure, whichever is highest from the floor.)</li><li>▪ In other sections of aircraft hangers, heaters must be installed a minimum of 8 ft. above the floor.</li><li>▪ Heaters installed in aircraft hangers shall be located so as not to be subject to damage by aircraft, cranes or other objects.</li><li>▪ When installed over hoists, the minimum required safe distances to combustibles must be maintained from the uppermost point of the combustible materials placed on the hoist.</li></ul>
<b>Public Garages</b>	<p>The HeatWave heater may be used in public garages provided the installation conforms to all local and national codes for the installation of gas burning appliances.</p> <ul style="list-style-type: none"><li>▪ Heaters must be installed a minimum of eight feet above the floor. Minimum safe distances to combustibles must be maintained.</li><li>▪ When installed over hoists the minimum required safe distances to combustibles must be maintained from the uppermost point of the combustible materials placed on the hoist.</li></ul>

## **HAZARDOUS LOCATIONS**

When there is a possibility of exposure to combustible airborne material or vapour, consult the local Fire Marshal, the Fire Insurance carrier or other authorities for approval of the proposed installation.

# General Installation Procedures

## Choosing a safe location:

When selecting a suitable mounting location for the heater, it is important to consider the following:

- The heater must be installed with a minimum of 7 ft. between the floor and the bottom of the heater in Canada. In the United States it must be installed with a minimum of 8 ft. between the floor and the bottom of the heater, unless the optional protective grill is used, in which case it may be installed with a minimum of 7 ft. between the floor and the bottom of the heater. (See grill installation procedure, page 16)
- The proposed mounting location allows for the minimum required safe distances to combustibles, including vehicles that may be parked in the building, wood, gasoline and flammable objects, liquids and vapours that may be stored in the space.
- The proposed location will not restrict motion of passageway doors or windows, or the operation of the overhead garage door.
- The proposed location will provide the best coverage of the total area to be heated.
- The proposed location will allow the required utilities (i.e. gas, and electric) and venting to be installed (bearing in mind the minimum and maximum vent length requirements).
- Sufficient clearances will exist to allow for maintenance.
- Overhead structural members are available, and suitably strong to support the heater assembly.

## General Guidelines:

Regardless of the vent arrangements that will be connected to the heater, the following general guidelines for venting must be followed:

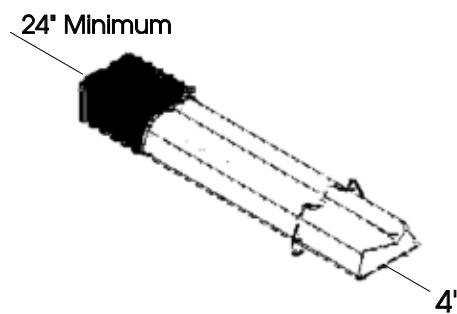
- The 3" flue pipe must be centered inside the 5" air supply pipe using the centering guides supplied.
- All horizontal venting sections must slope away from the heater at a rate of 1/4" per foot.
- The total length of vent pipe (horizontal and vertical) must not exceed 12 ft. and must not be less than 2 ft. 6 inches.
- The vent terminal, mounted outside of the building should not be located above walkways. Condensate produced during operation of the heater could drip onto the walkway and form ice during cold weather resulting in a dangerous condition.
- Be sure that the venting installation is in accordance with all applicable local codes and recommendations of the local gas supplier.
- DO NOT connect the heater to a separate chimney, and DO NOT common vent with any other fuel-burning appliance.
- Seal all vent pipe connections with high temperature silicone sealant and secure each connection with three sheet metal screws.



# General Installation Procedures

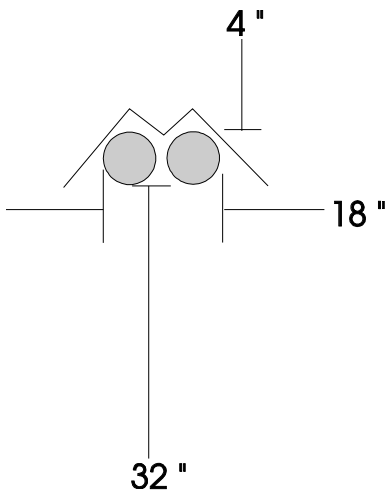
## Minimum Safe Distances

In all situations, the minimum required clearances to combustibles must be maintained. Combustibles are materials that may catch on fire, and include many common items such as wood, paper, rubber, fabrics, etc. Combustible material such as those noted, and any other combustible materials must not be placed closer to any base or side of the heater than the distances noted on the diagrams on the following page. If you have any questions concerning safe distances to combustibles contact Easy Radiant Works prior to proceeding. It is important to keep the minimum required safe clearances to combustibles at all times to avoid death, personal injury or property damage. Clearances to vehicles parked beneath heaters must be maintained. Signs should be posted to identify any possible violation of the clearances. Maximum allowable stacking height in storage areas should be identified with signs or appropriate markings. The illustrations following identify the minimum required safe clearances to combustibles.

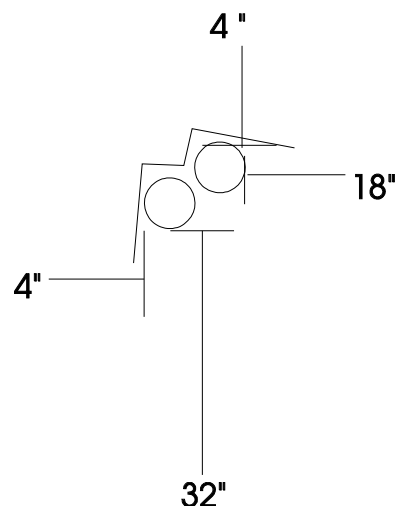


## Minimum Clearances to Combustibles

### Horizontal Mounting



### Angle Mounting



## IMPORTANT

The clearance to combustibles “below” (32 inches) indicates the safe clearance to combustibles and NOT the minimum mounting height.

# General Installation Procedures

## Heater Orientation

The HeatWave heater may be installed in either of the following orientations:

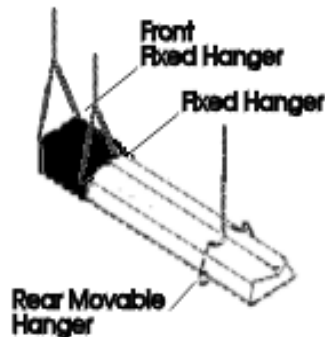
- horizontally
- tilted - 45 degree angle

For Horizontal installation (see drawing below):

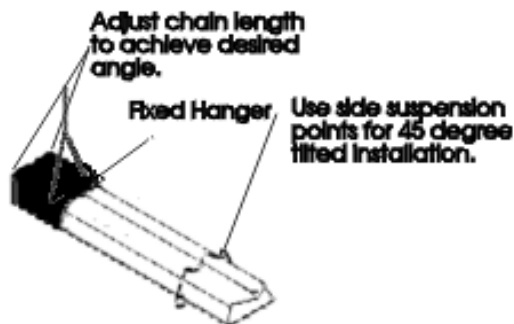
- Using “S” hooks; attach four equal lengths of #10 jack chain (or equivalent) to the 4 holes in the front fixed hangers.
- Connect the 2 free ends of the chain to another “S” hook, as shown.
- Connect a length of chain from the uppermost “S” hook to the suspension hardware you have previously installed in the ceiling to support the heater.
- Connect a length of chain to an “S” hook and slip the “S” hook under the center portion of the rear movable hanger. Connect the free end of this chain to the hardware you have previously installed in the ceiling to support the heater. Ensure that the heater is parallel to the floor.

For Angled Installation:

- Adjust the chain lengths at the front fixed hanger to achieve the appropriate angle.
- Use side suspension point on the rear movable hanger.

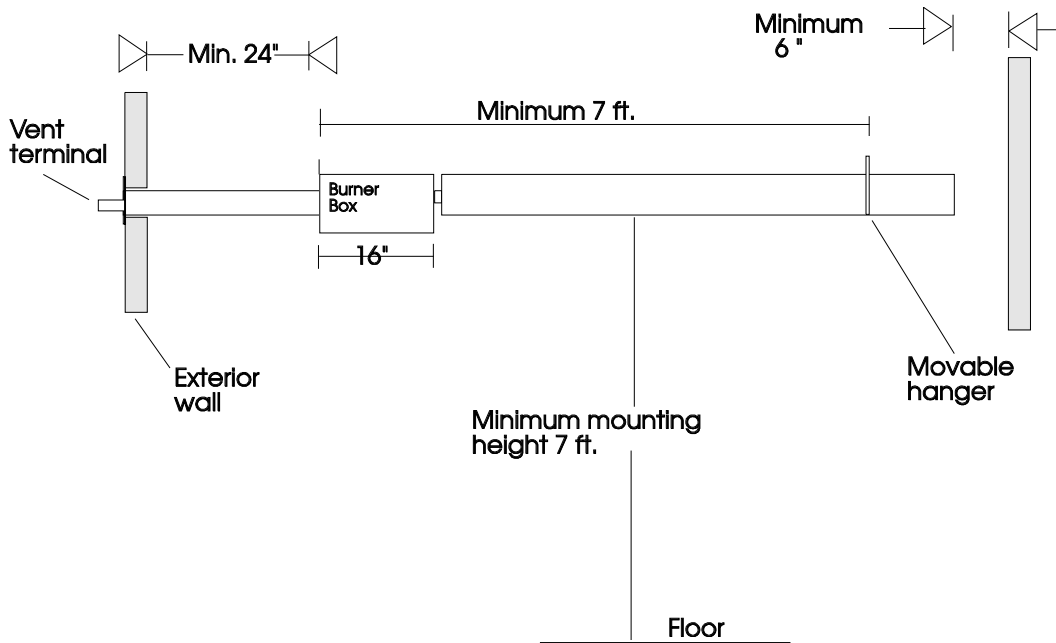


## Horizontal Mounting



Angled or tilted Installation

## Typical Installation



**Minimum mounting height in United States between bottom of tube and floor is 8 ft. (7 ft. if optional protective grill is used)**

## Venting Installation

### Horizontal Venting

After the heater has been properly suspended according to this manual, proceed to install the venting as described below:

- Measure the distance from the floor to the center of the vent collar on the rear of the burner. Transfer this measurement to the inside surface of the exterior wall that the vent will penetrate, and make a mark.
- Measure the distance between the exterior wall and the vent collar on the rear of the heater. If the distance between the rear surface of the heater and the exterior wall is greater than 5 ft., a vent extension kit (available from the manufacturer) is required.
- For each lineal foot of distance from the heater to the wall, measure down vertically (on the outside wall) 1/4 inch from the previous reference mark. This new mark is the center of the hole that must be cut to accommodate the 5-inch vent. Cut the hole in the exterior wall.
- Install the 3-inch flue pipe from the vent collar on the rear of the burner through the exterior wall. The flue pipe must extend a minimum of 6 inches **beyond the exterior wall**. Install the centering guides over the 3" flue.

# General Installation Procedures

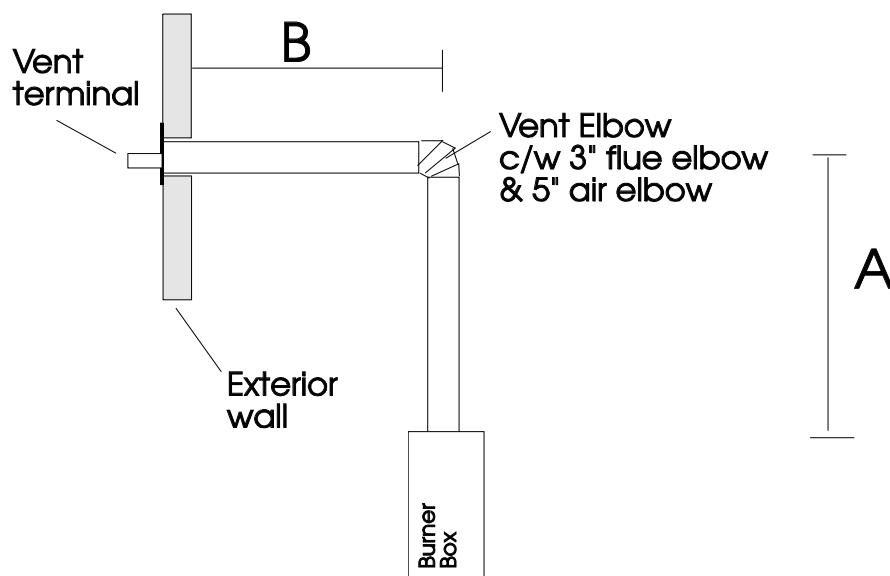
## Horizontal Venting (continued)

Cut the 3-inch flue pipe to the appropriate length. All joints must be sealed with high temperature silicone adhesive and be secured with 3 sheet metal screws.

- Assemble and cut if necessary, the 5-inch vent to run between the vent collar on the heater to the exterior wall. All joints must be sealed with high temperature silicone adhesive.
- From the exterior of the building, slip the 5" air supply pipe over the installed 3-inch flue pipe and centering guides. Connect the 5-inch pipe to the vent collar on the heater and seal with silicone adhesive and secure with 3 sheet metal screws.
- From the exterior of the building, slip the vent terminal onto the 3-inch flue pipe and guide the sleeve portion of the vent terminal into the 5-inch air supply pipe. Secure air vent pipe to the vent terminal with silicone adhesive.
- Secure the vent terminal to the exterior surface of the wall.

## Vent Elbow Assembly

Installing Horizontal Venting with an elbow:



After the heater has been properly suspended in accordance with this manual, proceed to install the venting and 90-degree elbow as described below.

Note: a 90-degree elbow kit (available from the manufacturer) is required for this installation.

- Measure the distance from the floor to the middle of the vent collar on the rear of the heater, and transfer this measurement to the exterior wall that will be penetrated with the vent.
- Measure distance "A" and "B" as shown above. If this distance (A plus B) is greater than 5 ft., a vent extension kit (available from the manufacturer) is required.

# General Installation Procedures

## Installing Horizontal Venting with an elbow (continued).

- For each linear foot of measured distance (total of A plus B) measure down vertically 1/4 inch from the reference mark on the exterior wall. This new reference mark is the centerline of the clearance hole for the 5" vent that must be cut in the wall. Proceed to cut the hole in the exterior wall after measuring carefully.
- Attach the 3" elbow portion of the 90-degree elbow kit to the 3" flue pipe (length A). Use silicone adhesive and 3 sheet metal screws.
- Slip the 5" air supply pipe over the plain end (without elbow) of the assembled 3" flue pipe and elbow.
- Attach plain end of the 3" flue pipe to the rear of the burner box using silicone sealant and 3 sheet metal screws.
- Attach 5" air supply pipe (length A) to the vent collar on the rear of the burner box using silicone sealant and 3 sheet metal screws.
- Assemble the 90-degree elbow in accordance with the instructions included with the elbow. Secure length "A" of the 5" air supply pipe to the elbow assembly using silicone sealant and 3 sheet metal screws.
- Attach length "B" of the 3" flue pipe to the 3" elbow using silicone and sheet metal screws. NOTE: the 3" flue pipe must extend a minimum of 6" beyond the exterior wall. Cut if necessary to the appropriate length. Install centering guides over the 3" flue pipe.
- From the exterior of the building, slip the 5" air supply pipe over the installed 3" flue pipe and centering guides. Connect the 5" pipe to the 90-degree elbow assembly using silicone adhesive and sheet metal screws.
- From the exterior of the building, slip the vent terminal onto the 3" flue pipe and guide the sleeve portion of the vent terminal into the 5" air supply pipe that is connected to the rear of the burner box. Secure the air vent pipe to the vent terminal with silicone adhesive.
- Secure the vent terminal to the exterior of the building.

# General Installation Procedures

## Bird Screen Installation:

The bird screen is supplied in order to prevent blockage of the flue vent by birds or other small animals nesting in the flue. It must be installed directly at the end of the 3-inch flue.

- orient the bird screen so that the flat surface is toward the exterior.
- insert the screen into the inside diameter of the 3 inch flue pipe.
- secure the bird screen with a sheet metal screw.

## Elbow Assembly:

If you are using the balanced flue elbow, assemble it in accordance with the instructions below.

- install the spacer.
- insert the 3 inch elbow into the 5" elbow.

## Electrical Service Installation:

The HeatWave heater requires a grounded 3-prong electrical outlet to be installed within 3 ft. of the rear surface of the heater's burner box. Extension cords may not be used. It is recommended that the outlet for the heater be ceiling mounted and should be a dedicated circuit.

Heater rating: 120 VAC, 60 Hz, Single Phase, and 1 amp

The heater must be electrically grounded in accordance with the following codes: Canada: Refer to Canadian Electrical code, CSA C22.1 Part-1 latest revision. In the United States refer to National Electrical Code, ANSI/NFPA-70- latest revision.

## Thermostat

A 24 VAC thermostat, supplied with the heater, controls the HeatWave. Thermostat wire is not supplied. Purchase 18 - 22 AWG double strand wire for this purpose.

Mount the thermostat on an exterior wall whenever possible.

Mount the thermostat approximately 5 ft. above the floor.

Mount the thermostat so that it is not in the direct ray of infra red energy from the heater.

Connect one end of the thermostat wire to the 2 terminals on the thermostat. Run the thermostat wire to the thermostat connection on the rear of the burner box. Make sure that the thermostat wire is free of staples or tacks as this can interfere in the operation of the thermostat.

## Gas Service Installation:

A ½ inch gas connection is required at the rear of the heater. All gas supply piping must be done by a qualified and licensed professional familiar with the installation of this type of appliance. All gas piping must be in accordance with all local and nation codes on the installation of gas burning appliances. **DO NOT ATTEMPT TO RUN GAS LINES YOURSELF.** This could result in loss of life, serious injury and/or property damage.

## Grill Installation:

The protective grill is optional. The protective grill must be used for installations in the United States where the distance from the bottom of the heater to the floor is less than 8 ft. If using the protective grill for installations in the United States, the bottom of the heater may be a minimum of 7 ft. above the floor. (See page 8)

## Normal Operating Sequence:

- When the thermostat calls for heat, the blower motor will be energized.
- When the blower reaches normal operating speed, the air proving switch closes completing the circuit to the ignition module that initiates the purge.
- The ignition module energizes the spark igniter.
- When the sparking begins, the gas valve is energized and opens.
- If flame is detected, the gas valve remains open. When the call for heat is ended (the thermostat is satisfied), the system is de-energized, and the burner line voltage and gas valve are turned off.
- If no flame is detected, the gas valve is closed and a purge period begins. After the purge period, the ignition module energizes the spark igniter and the gas valve. If flame is still not detected, a third and final purge sequence is begun. After 3 failed attempts to light the system control mechanism will lock out for one hour or until the thermostat is reset, at which time it will begin the entire process again.
- With a 3-try module, when the flame is established and then lost on the first or second trial, the gas valve will automatically turn off. A purge and trial for ignition will then occur.

## Routine Maintenance:

For best results and to ensure years of trouble free operation, a qualified service technician should inspect the system before each heating season.

- A qualified service technician should be contacted for any service that is required, in addition to routine maintenance.
- Check condition of blower scroll and motor to ensure it is free of dust and dirt.
- Check the condition of the burner and carefully remove any dust and debris from inside the burner compartment.
- Inspect the igniter to ensure it is operating and free of carbon.
- Check the flame observation window to ensure it is clean and free of cracks.
- Check flue pipes for soot, dirt and to ensure that it is not leaking products of combustion into the heated space.
- Check the vent terminal and outside air inlet to see that they have not become blocked during the non-heating season. If pipe is restricted, the air switch won't close resulting in a non-heat situation.
- The outside surfaces of the heater, including pipe and reflector, should be thoroughly cleaned with a damp cloth.

# Troubleshooting

This troubleshooting guide has been designed to assist you in locating and correcting minor problems that may occur with the heater. **Any and all adjustments or repairs must be done by a qualified and licensed professional familiar with the service of this type of appliance.**

## **Blower does not come on:**

Power cord is not plugged in.  
Thermostat setting is too low.  
DSI module needs to be reset.

Plug the power cord into a grounded 3-prong outlet.  
Increase thermostat temperature setting.  
Unplug the heater power cord from the outlet, wait a minimum of 5 seconds. Plug the heater back into the outlet.

No power to electrical outlet.  
Faulty thermostat wiring or faulty thermostat.

Replace fuse or reset circuit breaker.  
Install jumper wire across thermostat connection terminal on back of the burner box. If blower starts, remove the jumper wire and proceed as follows.  
Check wiring between heater and thermostat. If wiring is O.K.

Faulty blower motor.

Replace thermostat  
Replace blower motor.

## Igniter does not spark

DSI module needs to be reset.

Unplug heater power cord from the outlet. Wait 5 seconds and plug the heater back into the outlet.

Faulty igniter or ignition wire.

Unplug the heater from the outlet. Check the igniter and wire for damage. If damaged replace the igniter and/or cable as required.

Air switch does not operate.

Check 3 inch and 5 inch duct for obstructions, and remove obstructions if required. Check for loose or leaking hoses to the air switch. Repair or replace hoses as required.

Check to see that there is 24 V power to the air switch. If NO: check for 120 V across the primary terminals 1 & 3 of the transformer. If 120 V is present, replace the transformer.

If 120 V is not present. Check the wiring between the power cord, the blower motor and the transformer.  
If YES: Connect a jumper wire across air switch terminals. If jumper allows blower to operate, replace air switch. DO NOT LEAVE AIR SWITCH IN JUMPED CONDITION. SERIOUS INJURY, PROPERTY DAMAGE OR DEATH COULD RESULT.



## Troubleshooting (continued)

This troubleshooting guide has been designed to assist you in locating and correcting minor problems that may occur with the heater. **Any and all adjustments or repairs must be done by a qualified and licensed professional familiar with the service of this type of appliance.**

Igniter spark gap is incorrect.

Reset the gap to 1/8 inch (0.125")

### **Burner does not light:**

Air in gas line

Purge gas line.

Improper gas inlet pressure.

Check gas inlet pressure at the 1/8" NPT plugged tap. If gas pressure does not meet inlet pressure requirements, contact the gas supplier.

Natural Gas: Minimum 4.0" w.c.  
Maximum 14.0" w.c.

LP (Propane) Minimum 11.0" w.c.  
Maximum 14.0" w.c.

Gas valve does not open.

Check for 24 Volt across the valve terminals  
If NO: check wiring between the ignition module and the valve. Repair / replace faulty wires as required. If wiring O.K. replace ignition module.  
If YES: Replace gas valve.

Low gas outlet pressure.

Check gas manifold pressure at the tap on the gas valve. If manifold pressure does not meet requirements, adjust the valve outlet pressure with the adjustment screw on the valve.

NG (Natural Gas): 3.5" w.c.

LP (Propane): 10.5" w.c.

### **Burner does not stay lit:**

Damaged wires between DSI module and electrode.

Replace wires as required.

Faulty DSI module.

Replace DSI module.